Amendments to Claims

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Cancelled)
8. (Cancelled)
9. (Cancelled)
10. (Cancelled)
11. (Cancelled)
12. (Cancelled)
13. (Currently Amended) ~~An~~ switchable organic photodiode detector comprising a photodiode and a voltage source, said photodiode having a built-in potential and a prescribed photosensitivity range in response to incident radiation, said photodiode comprising:

a first electrode;

a photoactive organic layer disposed on said first electrode;

a second electrode disposed on said photoactive organic layer; and said voltage source adapted to selectively apply an operating biasing voltage across the ~~said first electrode and said second~~ electrodes, said biasing voltage operating to vary a selected ON state voltage across the electrodes to attain the ~~said~~ prescribed photosensitivity range.

14. (Cancelled)

15. (Original) The organic photodiode detector of claim 13, additionally comprising a support substrate upon which the first electrode is disposed wherein said support substrate and said first electrode are substantially transparent to the incident radiation.

16. (Original) The organic photodiode detector of claim 13, wherein said photoactive organic layer is comprised of a semiconducting conjugated polymer.

17. (Original) The organic photodiode detector of claim 16, wherein said semiconducting conjugated polymer is selected from:

poly(phenylenevinylene), and its derivatives;

polythiophene, and its derivatives;

poly(thiophene vinylene), and its derivatives;

polyacetylene, and its derivatives;

polyisothianaphene, and its derivatives;

polypyrrole, and its derivative;

poly(2,5-thienylenevinylene), and its derivatives;

poly(p-phenylene), and its derivatives;
polyfluourene, and its derivatives;
polycarbazole, and its derivatives;
poly(1,6-heptadiyne), and its derivatives;
polyquinolene, and its derivatives; and
polyaniline, and its derivatives.

18. (Original) The organic photodiode detector of claim 16, wherein said semiconducting conjugated polymer is the donor of a donor/acceptor polyblend, said acceptor being selected from poly(cyanophenylene vinylene), fullerene molecules including C_{60} and functional derivates thereof, PCBM and PCBCR.

19. (Original) The organic photodiode detector of claim 16 wherein said semiconducting conjugated polymer is the donor of a donor/acceptor polyblend, said acceptor being selected from an organic photoreceptor molecule or an electron transport molecule.

20. (Original) The organic photodiode detector of claim 13, wherein said photoactive organic layer comprises a material selected from a polymer/polymer polyblend, a polymer/(organic molecule) polyblend, and organic molecules, organometallic molecules, oligomers or molecular blends selected from:

anthracene and its derivatives,
tetracene and its derivatives,
phthalocyanine and its derivatives,
pinacyanol and its derivatives,
fullerene C_{60} and its derivatives,
thiophene and its derivatives,
phenylene and its derivatives,
oxadiazole and its derivatives,
PBD and its derivatives,
Alq_3 and other metal-chelate ($M\text{-}L_3$) type organometallic molecules,
$6T/C_{60}$ and blends comprising their derivatives,
6T/pinacyanol and blends comprising their derivatives,
phthalocyanine/o-chloranil and blends comprising their derivatives,
anthracene/C_{60} and blends comprising their derivatives, and
anthracene/o-chloranil and blends comprising their derivatives.

21. (Original) The organic photodiode detector of claim 13, wherein said photoactive organic layer is arranged in a semiconducting heterojunction structure having at least one set of donor and acceptor regions disposed therein.

22. (Original) The organic photodiode detector of claim 13, wherein said photoactive organic layer comprises optically inert organic additives and/or optically inert inorganic nanoparticles.

23. (Original) The organic photodiode detector of claim 13, wherein at least one of said first and second electrodes comprises conductor polymer.

24. (Original) The organic photodiode detector of claim 13, additionally comprising an optical filter layer adapted to restrict transmission of incident radiation to a predetermined wavelength range.

25. (Original) The organic photodiode detector of claim 24, wherein the predetermined wavelength range is selected to permit a spectral response which follows that of the human eye.

26. (Currently Amended) A photodiode array comprising a ~~pluraty~~ plurality of photodiode detectors of claim 13, said detectors having thereon photodiode arranged in ~~an~~ the array, each of said photodiodes being selectively addressable as a pixel of said array which said pixels including pixels for detecting radiation in the red range, pixels for detecting radiation in the green range, and pixels for detecting radiation in the blue range.

27. (Cancelled)

28. (Original) The organic photodiode detector of claim 27, wherein said ionized particles are selected from high energy photons, electrons, characteristic of X-rays, beta particles and gamma radiation.

29. (Cancelled)

30. (Cancelled)

31. (Cancelled)

32. (Cancelled)

33. (Cancelled)

34. (Original) The organic photodetector of claim 13, additionally comprising an optical mirror placed to form a microcavity optical etalon device which possesses selective response at resonant wavelengths.

35. (Currently Amended) The organic photodetector of claim 13, additionally comprising two optical mirrors placed outside to form a microcavity device ~~(optical etalon)~~ which possesses selective response at resonant wavelengths.

36. (Cancelled)

37. (Cancelled)

38. (Cancelled)